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IN HYPERMUSIC PROLOGUE, PHYSICIST LISA RANDALL RE-IMAGINES HER EXTRADIMENSIONAL THEORIES OF THE UNIVERSE AS OPERA.

Opera in the Fifth Dimension

ARTIFACTS / BY ELIZABETH CLINE / AUGUST 10, 2009

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Since writing a bestselling book on her fascinating and complex extra-dimensional theory of the universe, Harvard physicist [Lisa Randall](#) has been busy re-imagining it as an appropriately cerebral art form—opera. After three years of development, *Hypermusic Prologue: A Projective Opera in Seven Planes* premiered at Paris's prestigious [Centre Pompidou](#) in June and, like Randall's book *Warped Passages: Unraveling the Mysteries of the Universe's Hidden Dimensions* [\[Buy\]](#), it manages to translate the impenetrable world of theoretical physics into something that not only appeals to scientists, but to anyone willing to look beyond the obvious for clues about the nature of reality.

Spanish composer Hèctor Parra, 33, first saw artistic potential in Randall's ideas after reading *Warped Passages*, which uses plain language to describe how hidden dimensions may explain some of physics' greatest quandaries—such as why the gravitational force is so weak. When the book was released in Europe in 2006, Parra met up with Randall in Berlin to ask her to write a libretto based on her work. Randall admits she was “a little uncomfortable focusing so much on the physics,” she says, because she didn't want to alienate the audience. “But I did see that the exploration of an extra dimension could be very nice as a metaphor. It seemed exciting.”

As its title suggests, *Hypermusic Prologue* doesn't simply make art out of hard-to-grasp scientific theory, it inverts and renovates the genre of opera with an experimental score, a two-person cast, and minimalist and abstract stage design. Randall asked artist Matthew Ritchie [\[Video\]](#), whose sculptures often reference inflationary universe theory, to design the sets. Ritchie also developed a series of video projections for the performance: The industrial imagery projected behind baritone James Bobby represents the lower four-

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dimensional universe while the soprano, Charlotte Ellett, is often surrounded by projections of wildly colored celestial shapes, suggesting the expanded reality of a fifth dimension.

Parra, who composed the score, is the son of a physicist and his prior works have been influenced by particle physics. For *Hypermusic Prologue*, he uses an array of intricately thought-out sounds and instrumentations to communicate warped spacetime, as well as to signal changes in energy, mass, time, and gravity. As the soprano approaches a gravitationally strong part of the of the universe, for example, her voice is electronically treated to make her phrases shorter in mathematically precise increments and the orchestra matches this shorter phrasing. As she enters a hidden fifth dimension, her voice gets louder and the music gets sonically richer, while Bobby's voice—stuck in the lower-dimensional universe—remains digitally untreated and becomes softer and thinner.

As for Randall's libretto, it does not shy away from referencing how spacetime or gravity is altered in these hidden dimensions, but her ideas always manage to operate metaphorically. When the soprano sings, "The scale of my experience is altered," this is partly a literal reference to the way physical scaling changes in Randall's hidden dimensions. But Ellet is singing to her close-minded partner, baritone James Bobby, who keeps arguing the value of Newtonian physics until he finally has his own brief encounter with her unseen world. In this way, he becomes more open-minded and his perspective is altered.

Over the course of an hour, the soprano and baritone both experience a paradigm shift, and talk excitedly of "another view" that's "hidden yet true." In the final scenes, they are imbued with the sense of fearless exploration that drives both scientists and artists, amidst swirling hexagons of colors, digitally altered sounds, and ascending jittery strings. "It has a little bit to do with why I do science and about why I think there's more out there," Randall says of *Hypermusic Prologue*. "I've met a lot of other people in creative fields, and it is interesting to see how the same things drive them: The sense that there's something missing, that there's more to be done, that there's more to be known."

Hypermusic Prologue will move to Barcelona in November and from there will move to Luxembourg and Brussels. In January, New York's Guggenheim museum will host a special adaptation of of the opera as the finale of their "Universe Resounds: Art & Synesthesia" symposium.

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